CLAIMS

1. A method for inactivating microorganisms in an electrodeionization device comprising:

passing water through the electrodeionization device at a pharmaceutically acceptable sanitization temperature; and

maintaining the pharmaceutically acceptable sanitization temperature for a predetermined period of time.

2. The method of claim 1, wherein the step of maintaining the water temperature is performed until there is a pharmaceutically acceptable level of microorganisms in the electrodeionization device.

3. The method of claim 1, wherein the water temperature is maintained at greater than about 65 °C.

4. The method of claim 1, wherein the water temperature is maintained at about 80 °C.

5. The method of claim 1, further comprising the step of lowering the water temperature to less than about 30 °C.

6. A water purification system comprising:

an electrodeionization device fluidly connected to a heating device; and

a controller for regulating a flow and temperature of water at a pharmaceutically acceptable level in the electrodeionization device.

7. The water purification system of claim 6, wherein the water temperature is regulated to at least about 65 °C.

8. The water purification system of claim 6, wherein the water temperature is regulated to about 80 °C.

9. The water purification system of claim 6, wherein the water temperature is regulated until the electrodeionization device has been sanitized to satisfy pharmaceutical requirements.

10. The water purification system of claim 6, wherein the electrodeionization device comprises a spacer comprising at least one of polysulfone, polyphenylsulfone, polyphenylene oxide, polyphenylene ether and chlorinated poly(vinyl chloride).

11. A method for disinfecting an electrodeionization device comprising:

passing a disinfecting solution at a temperature sufficient to inactivate any microorganisms in the electrodeionization device.

12. The method of claim 11, wherein the step of passing the disinfecting solution is performed until the electrodeionization device is sanitized to a pharmaceutically acceptable condition.

13. The method of claim 11, wherein the disinfecting solution has a temperature that is suitable for sanitizing the electrodeionization device for pharmaceutical service.

14. The method of claim 11, wherein the temperature is at least about 65 °C.

15. The method of claim 11, wherein the temperature is about 80 °C.

16. The method of claim 11, further comprising the step of passing water to be purified through the electrodeionization device.

17. The method of claim 11, wherein the step of passing the disinfecting solution is performed until there is a pharmaceutically acceptable level of microorganisms in the electrodeionization device.

18. The method of claim 11, further comprising the step of passing a biocide compound through the electrodeionization device.

19. The method of claim 11, wherein the disinfecting solution consists essentially of a non-oxidizing compound.

20. An electrodeionization device comprising a spacer constructed of a material that is dimensionally stable at a temperature that sanitizes the electrodeionization device for pharmaceutical service.

21. The electrodeionization device of claim 20, wherein the material is dimensionally stable at greater than about 65 °C.

22. The electrodeionization device of claim 20, wherein the dimensionally stable material comprises at least one of polysulfone, polyphenylsulfone, polyphenylene oxide, polyphenylene ether and chlorinated poly(vinyl chloride).

23. A method for purifying water comprising:

passing water to be purified through the electrodeionization device; and

passing water at a temperature greater than about 65 °C through the electrodeionization device for a predetermined period.

24. The method of claim 23, wherein the water temperature is at least about 80 °C.

25. The method of claim 23, further comprising the step of reversing polarity of an applied electric field through the electrodeionization device.

26. An electrodeionization device comprising:

a rigid depleting compartment spacer having a groove formed on a side thereon;

a rigid concentrating compartment spacer that mates with the depleting compartment spacer; and

a resilient member disposed within the groove forming a water-tight seal between the depleting compartment and the concentrating compartment spacers.

27. The electrodeionization device of claim 26, wherein the groove is disposed around the perimeter of the depleting compartment spacer.

28. The electrodeionization device of claim 26, wherein the depleting compartment spacer has grooves formed on both sides thereon.

29. The electrodeionization device of claim 26, wherein the resilient member comprises at least one of a fluorinated elastomer and a silicone elastomer.

30. A method for purifying water comprising:

passing water to be purified through an electrodeionization device comprising a depleting compartment spacer having a groove formed on a side thereon, a concentrating compartment spacer and a resilient member disposed within the groove forming a water-tight seal between the depleting compartment and the concentrating compartment spacers; and

applying an electric field across the electrodeionization device.

31. An electrodeionization device comprising:

a depleting compartment spacer;

a concentrating compartment spacer; and

a water-tight seal positioned between the depleting compartment and the concentrating compartment spacers,

wherein the water-tight seal comprises an elastomeric sealing member disposed within a groove formed on a surface of either the depleting compartment or the concentrating compartment spacers.

32. The electrodeionization device of claim 31, wherein the depleting compartment spacer and the concentrating compartment spacer comprises a rigid material.

33. The electrodeionization device of claim 32, wherein the depleting compartment spacer comprises at least one of polysulfone, polyphenylsulfone, polyphenylene oxide, polyphenylene ether and chlorinated poly(viny chloride).

34. A method for purifying water comprising:

passing water to be purified through an electrodeionization device comprising a depleting compartment spacer, a concentrating compartment spacer and a water-tight seal comprising an elastomeric sealing member disposed within a groove formed on a surface of either the depleting compartment or the concentrating compartment spacers.

35. An electrodeionization device comprising:

a depleting compartment spacer and a concentrating compartment spacer separated by an ion selective membrane;

a primary seal positioned between the depleting compartment and the concentrating compartment spacers and securing the ion selective membrane; and

a secondary seal positioned between the depleting compartment and the concentrating compartment spacers.

36. The electrodeionization device of claim 35, wherein the primary seal comprises an elastomeric sealing member dimensioned to be disposed within a groove formed between mating surfaces of the depleting compartment and the concentrating compartment spacers.

37. The electrodeionization device of claim 35, wherein the secondary seal comprises an elastomeric sealing member dimensioned to be disposed within a groove formed between mating surfaces of the depleting compartment and the concentrating compartment spacers.

38. A method for facilitating water purification comprising providing an electrodeionization device comprising a depleting compartment spacer and a concentrating compartment spacer and a water-tight seal positioned between the depleting compartment and the concentrating compartment spacers.

39. A method for facilitating water purification comprising providing an electrodeionization device comprising a depleting compartment spacer having a groove formed on a side thereon, a concentrating compartment spacer and a resilient member disposed within the groove forming a water-tight seal between the depleting compartment and the concentrating compartment spacers.

40. A method for facilitating water purification comprising providing an electrodeionization device comprising a spacer constructed of a material that is dimensionally stable at a temperature greater than about 65°C.

41. An electrodeionization device comprising a spacer constructed of a material that is dimensionally stable at a temperature greater than about 65°C.

42. A method for facilitating inactivation of microorganisms comprising:

providing an electrodeionization device fluidly connectable to a heating device; and

providing a controller for regulating a flow and a temperature of water at a pharmaceutically acceptable level in the electrodeionization device.

43. A method for inactivating microorganisms in an electrodeionization device comprising:

passing water through a depleting compartment at a pharmaceutically acceptable sanitization temperature; and

maintaining the pharmaceutically acceptable sanitization temperature for a predetermined period of time.

44. A method for inactivating microorganisms in an electrodeionization device comprising:

passing water through a concentrating compartment at a pharmaceutically acceptable sanitization temperature; and

maintaining the pharmaceutically acceptable sanitization temperature for a predetermined period of time.